

Corso Veloce

MONTHLY MAGAZINE OF THE NEW ZEALAND FIAT OWNERS CLUB

**December 2019/
January 2020**





MARK'S MUSINGS

Earlier this year we bought you news of the failed merger attempt between Fiat Chrysler Automobiles (FCA) and Renault. Well, somewhat reminiscent of a shotgun wedding, FCA was evidently desperate to hook up with somebody – anybody! – and so now we have learnt that FCA and PSA Groupe (better

known as Peugeot Citroen) are to merge. More details on the 50:50 merger are reproduced elsewhere in this magazine.

It's a significant development for FCA and is obviously a sign of the challenges in the global car industry, some of which were laid out in an article in the last issue of *Corso Veloce*. Much of this has been forced on the industry by the climate crisis and the need for car manufacturers to reduce CO2 emissions, with the move to EVs being seen as a key solution. But the cost of moving away from a mature technology to a comparatively immature one is prohibitive, and unlike petrol or diesel engines, one electric motor is pretty much like another, so mergers to share the motor and battery technology are seen as the way to go.

The Fiat marque has existed for 120 years – spanning 3 centuries no less – but it's no stranger to mergers having mopped up most of the Italian car industry during the 1960s to 1990s. Again, those mergers were forced by circumstances, as the smaller brands like Ferrari, Lancia, and later Alfa Romeo and Maserati, could not survive on their own. It was all about sharing common components like engines and gearboxes to keep development costs

down. And more recently of course, the Fiat group merged with Chrysler after the latter's divorce from Mercedes-Benz. That too, has led to a sharing of components, and bizarre badge-engineering like the Chrysler 300C being sold as a Lancia Thema in Italy.

Meanwhile, PSA is made up of Peugeot – which has existed as a car brand for even longer than Fiat, and not dissimilarly also has a long history of family ownership – and Citroen, which it purchased in 1975. Only recently, it also purchased the European branch of General Motors, namely the Opel and Vauxhall brands. (the current Opel Insignia is rebadged here and in Australia as the Holden Commodore, but Holden is still part of GM. I had wondered where the next replacement would come from, but instead they've just axed the Commodore altogether!).

It's a bit of a full circle with FCA merging with PSA, as in the late 1970s PSA bought the European division of Chrysler (which had earlier taken over the British Hillman/Humber and French Simca brands), and briefly rebranded them as Talbot before essentially folding it into Peugeot. And now the new entity contains Chrysler USA. Small world!

So it seems a dramatic turn of events for a large global company like FCA to merge with yet another large, multi-brand car company, but as history shows that is not uncommon in the car industry. But it will be interesting to see what these developments bring and whether individual brands will continue to be sufficiently differentiated from their siblings. Let's hope what makes Fiat special continues to survive.

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Fleet news

I can report that by 2300 Familiare has now returned from an 18-month mechanical restoration at Bristol Motors in Upper Hutt, which some club members got to see earlier this year when we held a technical clubnight at their workshops. I've only driven it a couple of times but so far I am liking the overdrive on 4th, which I had added to the car during the rebuild. I had overdrive

continued on next page



COMING EVENTS

Sunday 26 January 2020: New Year club BBQ. After the nationwide weather bomb led to the cancellation of our popular traditional Xmas BBQ, we are re-scheduling this for late January. All the other details are the same: meet at the the **Otaihanga Domain** in Paraparaumu at **midday**. The club will supply sausages and beverages; bring your own salads and side dishes. RSVP to focnz.contact@gmail.com to confirm numbers.

12 January: Southwards Coffee & Cars (from 10am-1pm)

9 February: British & European Car Show, Trentham (from 10am-3pm)

16 February: Shannon Spectacular car show

8 March: Southwards Coffee & Cars (from 10am-1pm)

NEW MEMBERS

A warm welcome to new members who have joined us in the last few months:

David Hughes, Lower Hutt – 1984 Fiat 130TC Abarth

Harry Rogers, Auckland – 2011 Fiat Abarth 695 Tributo Ferrari

Wishing all club members a fun festive season, happy Fiat-ing!



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on my sedan which is also under restoration (well, on hold...), but it didn't operate very well so I tended not to use it (it had also been retrofitted and was missing the original switchgear). A donor car I obtained had a factory-fitted overdrive unit with the correct steering column-mounted switch, dashboard 'on' light, and accelerator kickdown switch, so this was all fitted to the wagon. Apparently it was a bit of a mission to get it working correctly, and Bristol's ended up cannibalising the overdrive unit from the sedan to make one good unit (the sedan will be rebuilt as an auto anyway). But now it operates very smoothly, and I'm guessing it drops revs by about 500rpm (the 2300s have no rev-counter), which is noticeable as it is a low-revving engine anyway, with heaps of torque. After all that work, you can expect to see the wagon at club events in place of my X1/9 as I plan to drive it more.



The reconditioned gearbox, sans overdrive

FIAT CHRYSLER & PEUGEOT CITROEN TO MERGE

The boards of Fiat Chrysler Automobiles and the Peugeot owner, Groupe PSA, have approved a plan to join forces in a 50/50 share merger that will create the world's fourth-largest carmaker in terms of sales behind Volkswagen, Renault-Nissan-Mitsubishi and Toyota.

The NZ\$70 billion tie-up will deliver annual vehicle sales of 8.7 million, revenues of \$296b and operating profits of more than \$19b.

Moves to combine the US-Italian and French firms have come as carmakers seek scale to cope with costly new technologies, stricter emissions standards and slowing global demand.



The new group is expected to generate savings and other benefits of \$6.4b without any factory closures, FCA and PSA say.

Agreement to pursue the deal comes months after a similar merger attempt between FCA and PSA's French rival Renault fell apart, with the companies blaming the intervention of the French government, Renault's largest shareholder.

In a joint statement, FCA and PSA say their boards of directors "have each unanimously agreed to work towards a full combination of their respective businesses by way of a 50/50 merger".

The merger would be achieved via the creation of a parent company in which the shareholders of each current group would own half. FCA's John Elkann, would be chairman of the parent company and PSA's Carlos Tavares, the chief executive and a member of the board.

FCA and PSA say they "both share the conviction that there is compelling logic for a bold and decisive move that would create an industry leader with the scale, capabilities and resources to capture successfully the opportunities and manage effectively the challenges of the new era in mobility".

The move comes as carmakers grapple with a downturn in their markets as well as hefty investments in electric and self-driving vehicles. FCA would get access to PSA's more modern vehicle platforms, helping it to meet tough new emissions rules, while Europe-focused PSA would benefit from FCA's profitable US business featuring brands such as Jeep.

"We're in a period where grey skies are gathering over the auto industry. When business is harder, competition is stronger and margins get thinner," says Flavien Neuvy, director of the Cetelem Observatory, a research unit of BNP Paribas.

FCA CEO Mike Manley's email to employees:

Dear Colleagues,

I'm pleased to announce that we are taking steps towards a 50/50

merger with Groupe PSA aimed at creating a leading global mobility group – one with the scale, talent and resources to compete and win in a transforming industry.

The combination of our two businesses would create the 4th largest automotive group with potential annual sales of nearly 9 million vehicles and combined revenues of some €170 billion. It would unite the groups' respective brand strengths across Luxury, Premium, Mainstream Passenger Car, SUV and Trucks & Light Commercial. And it would benefit from pooled capabilities in the in the key technologies that are reshaping the future of mobility.

By becoming one single group, we would be able to generate significant value, delivering approximately 3.7 billion euro in estimated annual run-rate synergies from investment efficiencies from sharing vehicle platforms, powertrains, technologies and enhanced purchasing power. These synergies are NOT based on closing plants.

Let me add that this proposed merger is about more than just numbers and synergies. We would be bringing together two companies with a shared vision, openness and trust in each other. On a personal note, my respect for and friendship with Groupe PSA's CEO, Carlos Tavares, stretch back nearly a decade. I am inspired by the prospect of working together with him and all of you to build a great new company together.

Merging companies and cultures is something we know how to do well. FCA is a product of our ability to leverage each other's backgrounds, embrace diversity and collectively drive for results. The combination we envision with Groupe PSA will build on that success.



Mike Manley, then head of Jeep brand

- www.moparinsiders.com

FIAT WORKSHOP MANUALS AVAILABLE FOR LENDING

The club has a range of workshop manuals and parts catalogues that are available for lending to club members. Contact the President if you wish to borrow any or email focnz.contact@gmail.com

Fiat workshop manuals:

Fiat 500
Fiat 600
Fiat 1100T
Fiat 1400 – 1900 A&B
Fiat 1300 – 1500
Fiat 1800 & 2100, 1800B & 2300
Fiat 125

Fiat service manuals:

Fiat 126
Fiat 131
Fiat 132
Passenger cars: 500, 850 coupe & van, 127, 128 & Sport

Fiat parts catalogues (1960s):

Fiat 1100 & Fiat 1100 bodywork
Fiat 1100T & Fiat 1100T bodywork
Fiat 1400B
Fiat 1300 – 1500 & Fiat 1300 – 1500 bodywork
Fiat 1800 and Fiat 1800 bodywork
Fiat 1800B bodywork
Fiat 2300 bodywork



Fiat parts catalogues (1970s):

Fiat 500
Fiat 850
Fiat 850 Coupe
Fiat 1300 & 1500
Fiat 127
Fiat 128
Fiat 128 Coupe
Fiat 125 Special
Fiat 124 Sport 1400
Fiat 124 Sport 1600
Fiat 124 Sport BC
Fiat 124 Sport CC
Fiat 125
Fiat 132
Fiat 132 GL & GLS



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MARK'S MODEL CORNER

1:24 scale models

In this column, I review some 1:24 diecast models. I've illustrated in previous columns that the most common diecast sizes are 1:43 or 1:18 (with 1:24 being the default size for *kitsets*), but there are some diecast 1:24 models, and in recent years more have become available although it's a much smaller market than the other two sizes. My observation, from the models I have purchased, is that they are more toy-like, often with opening parts, rather than targeted at the diehard collector so are not of the highest standard but consequently are quite cheap.

Quattroruote

Quattroruote (yes, I've spelt that correctly!) is an Italian motoring magazine, and a few years ago they decided to produce a series of 1:24 scale models to support a special series of publications on classic cars. What is interesting about their models is that they've focussed on everyday cars that were common in period, rather than exotics. As an Italian magazine, domestic models feature strongly, but they have also produced a wide range of other popular European marques.

That means a good range of Fiat models that many of us can relate to, including the classic 500 and Giardiniera, 600 and Multipla, 850 Berlina, 124 Spider, 127, 128, X1/9, 131, Panda and Uno. Lancia models include the Aurelia Spider, Fulvia HF and Delta HF.

Of course, as the owner of a 1:1 X1/9, I had to buy the 1:24 model below. It's accurate and nicely detailed, with every panel opening, and a removable roof (although annoyingly, the roof panel won't stow in the front boot, unlike the real thing). It wasn't expensive, and I thought it was good value.



Cute-as-a-button Quattroruote Autobianchi from the writer's collection

Prices on eBay for the Quattroruote 1:24 range vary widely, which suggests that they may now be out of production, but some are priced as low as \$30 (excluding postage), while others were over \$100.



(above and below) A selection of other Quattroruote 1:24 models



IXO

IXO manufacture a large range of 1:43 scale models, but in recent years have branched out into 1:24. A Spanish brand, one of their first 1:24 models was the SEAT 1500 (below), no doubt chosen due to it being one of Spain's earliest domestically-manufactured vehicles, and its resulting popularity in period. I have followed scale models of the SEAT 1500 because it is, of course, identical to the Fiat 2300, although with a 4-cylinder engine (many SEATs used old Fiat tooling). The IXO is an accurate and nicely-detailed model with no opening parts. It can be purchased for as little as \$20 on eBay, excluding postage and represents good value for money. Other re-badged Fiats in the IXO SEAT 1:24 range include a 600, 850 Berlina, 124 Berlina, and 131 Abarth.



IXO's 1:24 scale 124. Geddit?

Hachette

Hachette are another magazine publisher that have also produced a series of popular Fiat models as part of a magazine series. I've not purchased any of their models yet so can't comment on quality, but price-wise they also seem good value.

Their models include the classic 500, 850 Sport, 125 and Panda. They also have some Lada derivatives if you're enthusiastic enough, including wagon versions.

Looking on eBay, prices for Hachette models ranged from \$40-\$65 (excluding postage).

(below) The Hachette 1:24 Fiat range



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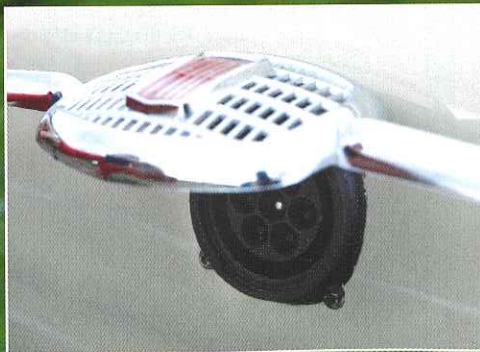
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CINQUELECTRO

Having driven this pure electric Fiat 500, we're convinced this is the way all Fiat 500s should be

Story by Chris Rees
Photography by Michael Ward





Chugga-chugga-chug-chug. The sound of a Fiat 500 starter motor turning over is one you never forget. Except this time, you can totally forget it. Turning the key in the slot of this 500 produces no sound whatsoever.

You see, I'm in a Fiat 500 converted to pure electric power, and the only noise it makes is the faintest hum. Welcome to the past, reimagined for the future. It's a new venture developed jointly by Classic Chrome in London and Electric Classic Cars, which is based in mid-Wales and which has already converted many classics to battery power. The baby Fiat seems to me the perfect car to electrify: an urban classic, it drives far better than the original and now has zero tailpipe emissions.

Here's another difference in the way it drives: delicately feathering the clutch pedal on take-offs is now history. Instead, you don't even need to use your left foot when setting off. Just engage a gear – second will do – then press the accelerator and you're away. It's so easy that Alexander the meerkat should be alongside me screaming "Simples!".

It's not just easy to drive, but fast too. Some glaciers move more quickly than a well-worn 499cc Fiat, but the electrified version fairly zooms along. You get 100% torque, instantly, from rest. The power and torque figures for the standard version (three-batteries and 16kWh) are 47hp and 95Nm (70lb ft). While this may not sound like much, it's roughly three times more than an original Fiat 500F. In a machine weighing less than 500kg, it's plenty enough, believe me.

The motor is a three-phase AC unit from HPEVS (High Performance Electric Vehicle Systems). As for the batteries, these come from Tesla, no less. There are three in the standard 16kWh version. You can have more performance by opting for a more powerful 65hp motor and four batteries (total 22kWh). In my humble opinion, that may well be too much for the baby Fiat.

The 47hp model's top speed is over 70mph; with the higher power motor fitted, it's an 'unmentionable' figure. Depending on how you drive, the range is 50-75 miles between charges (or 100 miles with four batteries fitted). You can charge the car at home

overnight with a 13-amp plug, or use a commercial charging point. Simply lift up the front badge and there's the connector – beautiful! It takes about six hours to charge via a 2.5kW charger.

The original Fiat gearbox is retained, which means that, unlike almost every other EV (which typically have a single-speed gearbox), the 500 EV has four speeds. In our London road test, we found that you don't really need to change gear much; you can waft about in second or third gear and simply let the torque do the work. To cope with the extra power, modifications are needed to the suspension and driveshafts, while uprated front disc brakes are also fitted.

Our test car is a 1970 example, but Classic Chrome has previously converted an early suicide-door 500, too. Step inside and the cabin looks almost entirely standard. The original choke and starting levers that normally nestle between the seats are replaced by new controls for the electric heater. On the dashboard sits an E-Xpert battery monitor to let you know how much juice you've got left. One other change: under




CONTACT: Classic Chrome, 12 Sheen Lane,
London SW14 8LN. Tel: 0208 876 8171.
Web: www.electricfiat500.com



the bonnet, the petrol tank has been removed, leaving useful storage space (the battery pack located here is tiny).

I love this electric Fiat. It feels just right, like it was always meant to be this way. Everyone in big cities should be driving cars like this. But here's what may be the stumbling block for many people: the price. It costs around £25,000 to convert a Fiat 500 to electric power in base spec; £29,000 for the high-power model. The company will soon be offering DIY kits that will reduce that cost by quite a bit, though. Optional extras include an upgrade to Fiat 126 rack-and-pinion steering, LHD to RHD conversions, and various in-car entertainment and car security systems.

In cities that are increasingly imposing new restrictions on conventionally powered cars, electric classics are a brilliant solution, drawing inspiration from both the future and the past. This Fiat 500 could also be just about the cheapest car in the world to run, too: free road tax, free London congestion charge, about two quid to recharge and virtually no mechanical parts in the drivetrain to maintain. Sensible, planet-saving and heaps of fun – we want one, a lot. 



TECHNICAL SPECIFICATIONS

FIAT 500 ELECTRIC

ENGINE:	75V electric motor, Tesla
	16kWh batteries
POWER:	47hp
TORQUE:	95Nm (70lb ft)
TRANSMISSION:	Four-speed manual
RANGE:	Up to 75 miles
CO ₂ :	0g/km
TOP SPEED:	Over 70mph
PRICE:	Approx £25,000



Bialbero!

Fiat's brilliant and versatile twin-cam engine led the world on the road, race track and rally stages for more than three decades. What made it so special?

Story by Phil Ward & Guy Croft
Photography by Michael Ward

One of the all-time great four-cylinder engines – perhaps all-time great, full stop – was Fiat's legendary twin-cam. A whole new era began for Fiat in November 1966 when the 124 Sport Spider debuted at the Turin Show. This exciting new sports car was designed by Tom Tjaarda of Pininfarina and built at the Farina factory. Powering it was a revolutionary new twin-cam engine designed by ex-Ferrari engineer, Aurelio Lampredi. In fact, the engine would long outlive the 124. Developments of the basic design went on to power a wide and varied range of models – Fiats, Lancias, Seats, Alfa Romeos and more – right up until 1998.

Lampredi could never have foreseen how successful his engine design would be, with at least 120 different applications. For the record, the twin-cam found its way into 15 Fiats, 13 Lancias, two Alfa Romeos and at least five Seats. Morgan adopted the engine between 1982 and 1986 for its Plus 4. There was even a 2.0-litre version for the FSO Polonez.

An astonishing variety of layouts included 8-valve, 16-valve, supercharged, turbocharged, carburetted, fuel-injected, front-wheel drive, rear-wheel drive, mid-engine transverse, tilted backwards or forwards, or upright. The list of accolades included 10 World

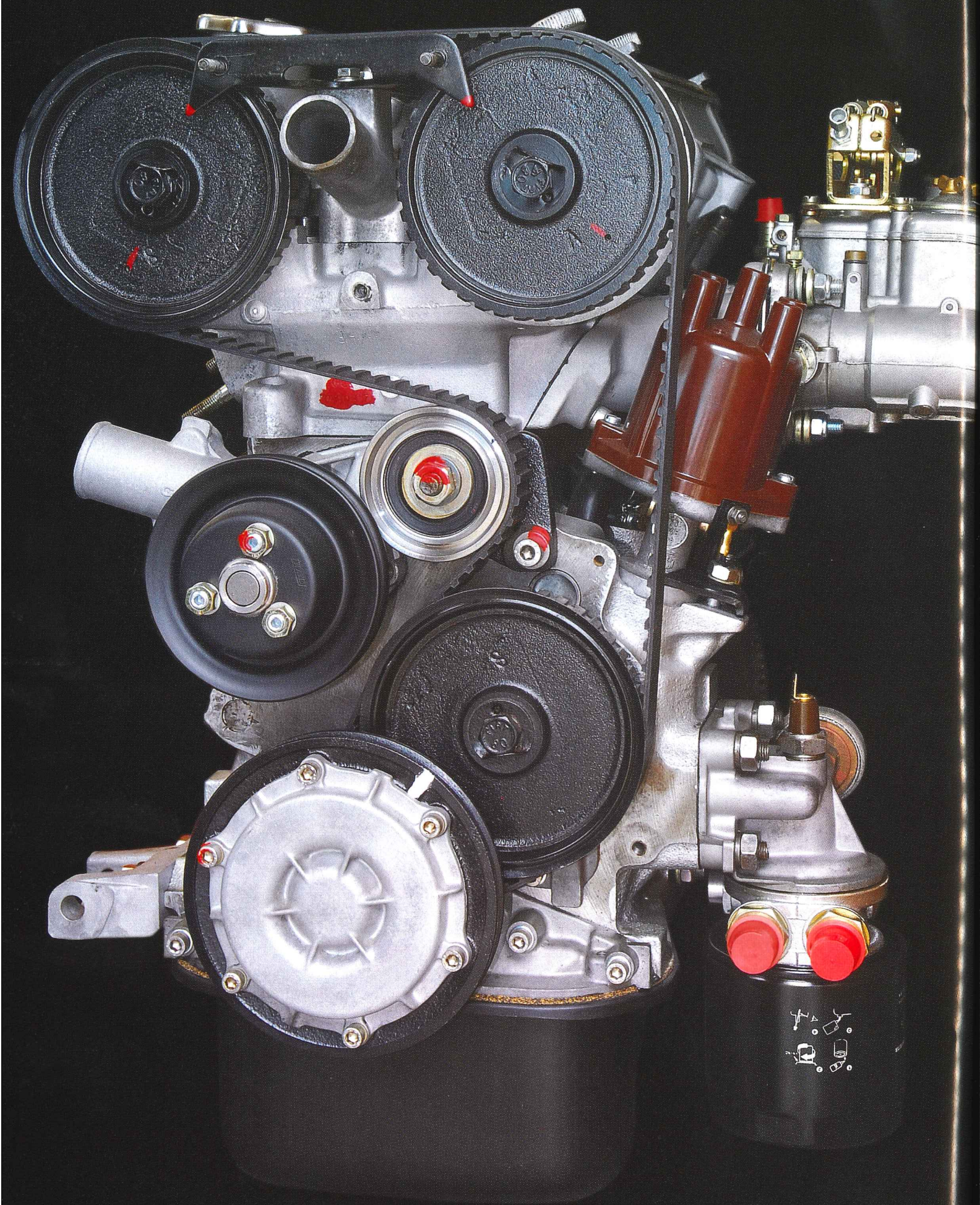
Rally and two World Sportscar Championships. It became, quite simply, the most versatile Italian engine of all time.

The first 90hp 1438cc twin-cam in the 124 Sport Spider had a bore of 80mm and a stroke of 71.5mm. Production and competition engines were to be expanded through a range of 14 capacities right up to 2111cc. The first capacity increase – to 1608cc – occurred in 1967 when the 125 saloon was introduced. Although still rated at 90hp, the engine had more torque, and perfectly square bore and stroke dimensions of 80mm x 80mm.

Next came the 100hp 125S version and, by 1969, it had also found its way into the second series 124 Sport Spider and 124 Sport Coupe. When fitted with twin downdraught carburettors, this engine pushed out a useful 110hp at 6400rpm and is seen by many classic car enthusiasts to be the most desirable production specification.

The first major development came in 1972 when the Fiat 132 saloon was launched. The new capacities were 1592cc and 1756cc, the former being 16cc smaller than the old 125 unit, apparently for fiscal reasons. Both engines benefited from having a longer block which increased the amount of material between the bores. Each version employed the same 79.2mm stroke







crankshaft but with either 80mm or 84mm bores to achieve the different capacities. Transverse versions with various capacities were installed in the first series Lancia Betas from 1974.

The next significant development was the introduction of the 112hp 2.0-litre (1995cc) engine for the 132 in 1972. This engine, with a bore of 84mm and a stroke of 90mm, was later uprated to 119hp and was also adapted for the Lancia Beta in 1975. Several additional new capacities were introduced in 1979, namely the 1585cc and versions including 1297cc and 1301cc. The 2.0-litre twin-cam proved to be an ideal engine for the Fiat 131 Mirafiori, Fiat Spider 2000, Fiat Croma, Lancia Beta, Lancia Montecarlo and Thema.

Lampredi designed a 16-valve cylinder head for the twin-cam which first appeared on the 131 Abarth in 1975. Sadly, he died in 1985, before he could see the ultimate development of his creation, the Lancia Delta HF integrale 16v of 1989.

The twin-cam was also adopted by Alfa Romeo, first appearing in the 164 2.0i Turbo of 1988. Then came the 155 Q4 of 1992, a four-wheel drive Alfa 'integrale'

produced to homologate the 155 GTA for Touring Car racing. The engine also found its way into the stylish Fiat Coupé in 1993 and soldiered on until the Lancia Dedra and Delta HPE were finally phased out in 1998.

TECHNICALLY TERRIFIC

Guy Croft (www.guy-croft.com) is widely recognised as being the world's leading authority on tuning Fiat and Lancia twin-cam engines and other full-race competition engines. Here he assesses the twin-cam engine from a technical viewpoint.

Aurelio Lampredi was a man determined to put Fiat at the forefront of sports car design. The majority of engines in the 1960s represented no real opposition; but how to compete for press accolades against Italy's famous Lancia and Alfa designs and the young British upstart, Lotus? Keeping costs down is one clue to his engine's success; and it was a resounding success. Leaving aside its fabulous rally history, in its class Lampredi's twin-cam remains one of the most durable, powerful, adaptable and talked-about engines of all time. Even at the end of its lengthy production run,

Fiat's twin-cam engine saw action in many different cars, from the 125 to the 132 and the 124 Coupé





The twin-cam lasted well into the 1990s, notably in Lancias like integrale, Kappa and second-gen Delta

some parts remained from the original concept (such as the dual valve springs), still functioning flawlessly.

What real room for manoeuvre did Lampredi have, given that he would have had lightness, power and aesthetics drummed into him at Ferrari? Well, the use of aluminium alloy for main components, such as the cylinder head and cam boxes, and ancillaries like the oil pump and filter housing, water pump and seal housings. No, that wasn't news. Nor was the use of five-bearing crankshafts, tri-metal bearings, forged rods, three-ring alloy pistons, and lightweight flywheels. Nor were camshafts that did not need bearing shells, nor the use of direct-acting cam buckets. All good race engine designers (and he was one) knew about inclined valves, downdraught ports and multiple carburettors. The list went on and on.

All engines have their problems. The Lotus, for example, although a compact and powerful design, was a quirky thing to cast and there were terrible teething problems. Its cast iron block, though compact, was thick and consequently very heavy and, despite that, not particularly rigid. The Alfa and Lancia engines of



the period, though jewels of all-alloy designs, were very expensive to produce and this was reflected in the cost of the cars and the people who bought them. And to compound the problem, Lampredi's all-new power pack had to dovetail into the architecture of a mass-production car, not a line producing a few hundred a month, where even modest design changes – when production started – such as bulges or louvres in the bonnet would be out of the question. No easy task.

Looking ahead to uprating options based around the production unit, given that Fiat's future involvement in the World Rally Championship can hardly have been a secret by that time (Fiat bought Abarth in 1971), the engine would need a high degree of flexibility built into it, so that skilled fettlers and engine-builders could go to work on the powerplant and double its output. In those days, pre CAD-CAM and advance simulations, winning a rally turned entirely on the skills of the people working in the tuning factory. There was no way rally-style power output could be built into the core engine at birth but still Lampredi's final design offered more true potential than any other eight-valve twin-



cam engine, then or since.

Lampredi's first key decision was to have a thermally efficient alloy cylinder head fitted with removable cam boxes. No doubt there was some discussion about whether twin-camshafts were really needed. However, the result was a masterpiece of low mass and strength. Much careful consideration was surely given to its actual dimensions and layout. Lampredi chose an inclined valve set-up with about 10° of downdraught on the inlet port. Not a lot by any means, but any downdraught is better than none; especially when coupled to large (42mm/36mm) valves and stem angles of around 31°. This assured that, without making the head too bulky or difficult to work on (a major consideration on a production unit), the flow through the ports was nothing short of superb.


Moreover, the cross-scavenging from such huge valves, facing each other across a pent-roof-style combustion chamber, was outstanding. This is where both power and economy come in. It's easy to get one without the other but Lampredi achieved both and, unlike the ports in modern computer-designed eight-valve heads – where there is no 'redundancy' at all and no potential for tuning by old-style 'porting' techniques – the twin-cam had plenty of extra material in hand. This meant that, in time, the twin-cam unit could easily be 'ported' to give more flow and power. The valves could be enlarged without any real difficulty (and indeed were, along with the inlet ports on production variants later on) and the valve-train architecture readily adapted to the most radical camshafts available.

The twin-cam block would be conventional only in that it would be in cast iron, but where Lampredi's version differed substantially from anything that went

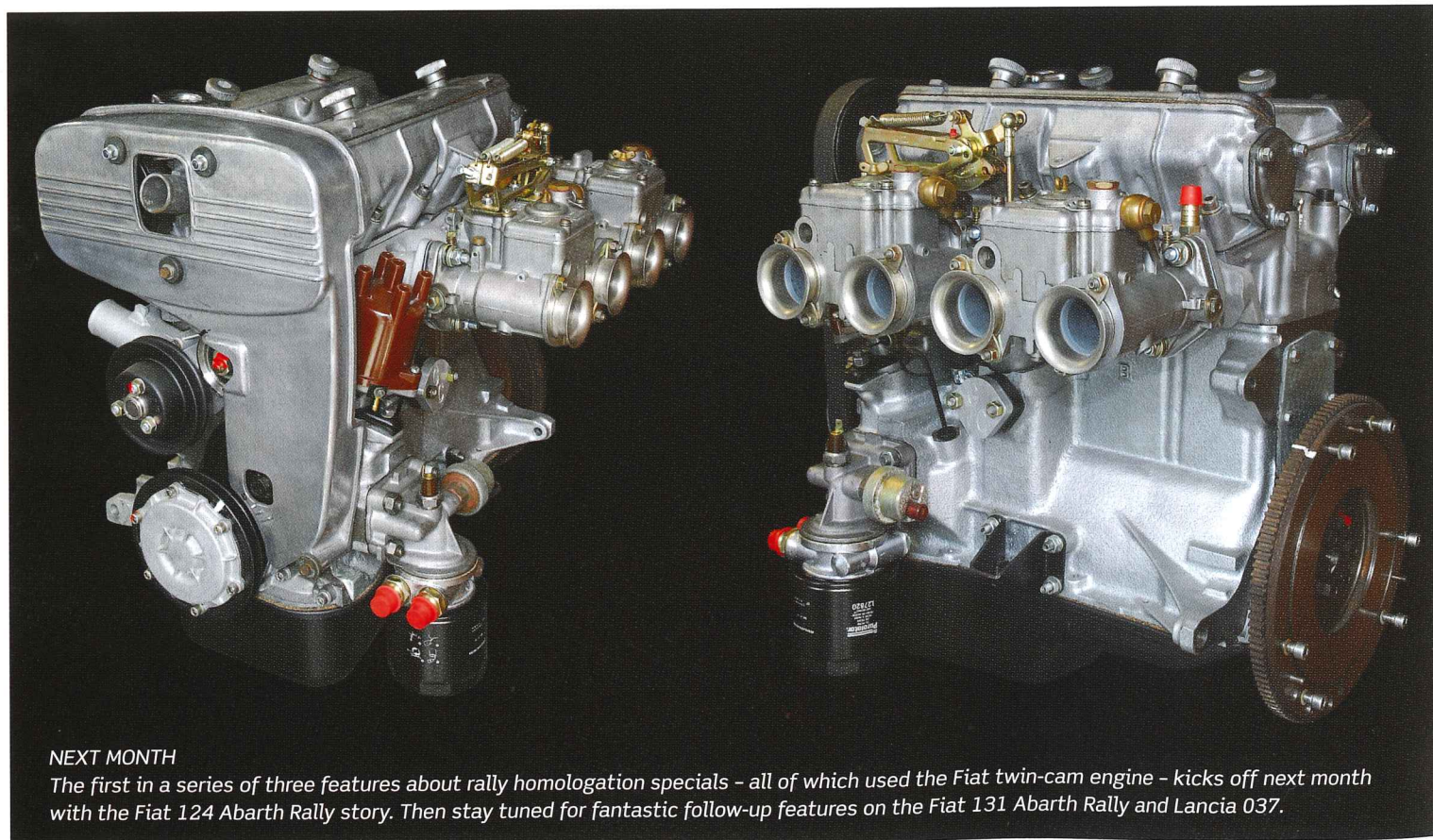
before was in the clever arch and web support in key areas, and a deep crankcase skirt, which resulted in a unit of unparalleled lightness and strength, along with very low cost. Here the Chief would have been in his element, paring things to the absolute minimum. And it worked: fractures due to torsional weakness around the mounting points and crank journal housings would be a thing of the past – they never broke.

The use of cam buckets (followers) with the tappet on top, rather than under the bucket, was another very innovative idea; again, widely copied. With removable cam boxes, the gaskets settle over time and periodic adjustment of the valve clearances is needed. That system not only made routine maintenance simpler than contemporary designs but also simplified assembly at the factory.

Perhaps most importantly of all, Lampredi embraced the new cambelt drive technology pioneered by the USA Gates Corporation, something never done before (and it rarely gets more than a passing mention). It was a very bold and inspired move that reduced the cost of engine production massively. No chain case with all the complicated design time, casting and machining. No sprockets, costly things to make, especially if adjustable cam timing might be needed. No risk-prone chain tensioner/slipper devices, 'ticklish' things to maintain. The belt drive system is lighter, plus it's far quieter and easier to service. It was quite simply one of the most reliable set-ups ever produced and the method has been much copied.

The original 1438cc unit easily developed a whopping 90hp at 6400rpm even on a single carburettor, with plenty of 'over-run' in hand with those wonderful dual valve springs. Was it breathtakingly original when it first came out? You bet it was. 

Extremely clever choices by Lampredi made the twin-cam tunable but still reliable and cheap to make



NEXT MONTH

The first in a series of three features about rally homologation specials – all of which used the Fiat twin-cam engine – kicks off next month with the Fiat 124 Abarth Rally story. Then stay tuned for fantastic follow-up features on the Fiat 131 Abarth Rally and Lancia 037.